

REMARKS

Reconsideration of the application in view of the above amendments and the following remarks is requested. Claims 65-80 are in this application. Claims 1-64 have been cancelled. Claims 65, 69, and 73 have been amended. In addition to the amendments discussed below, the claims have been amended to alternately recite the invention.

Applicant requests the Examiner to clarify the status of the drawings. In the office action mailed January 23, 2006, the Examiner indicated that drawings filed on November 1, 2005 were accepted. In the present office action, the Examiner indicated that the drawings filed on December 3, 2003 were accepted. As a result, applicant requests the Examiner to reaccept the drawings filed on November 1, 2005.

The Examiner rejected claims 65-80 under 35 U.S.C. §102(e) as being anticipated by Farrar (U.S. Patent Publication No. 2002/0024150). For the reasons set forth below, applicant respectfully traverse this rejection.

Claim 65 recites:

"A method of forming a conductor on a semiconductor structure, the semiconductor structure having a layer of insulation material and a via that contacts the layer of insulation material, the layer of insulation material having a top surface, the method comprising:

"etching the top surface of the layer of insulation material to form a plurality of spaced-apart first openings in the layer of insulation material, each first opening having a bottom surface that lies below the top surface of the layer of insulation material; and

"simultaneously etching the top surface of the layer of insulation material and the bottom surface of each first opening to form a second opening in the layer of insulation material, and lower the bottom surface of each first opening to form a plurality of spaced-apart lowered first openings that each have a bottom surface, the bottom surfaces of two or more of the plurality of spaced-apart lowered first openings exposing the via, the second opening having a top that lies in a common plane with the top surface of the layer of insulation material, and a bottom that lies below the top surface of the layer of insulation material, each of the plurality of spaced-apart lowered first openings extending away from the bottom of the second opening."

In rejecting the claims, the Examiner appears to point to the formation of the via openings 56a shown in FIG. 11 of Farrar as reading on the "etching" element of claim 65, with the via openings 56a constituting the plurality of spaced-apart first openings. The Examiner also appears to point to the formation of trench openings 65 and the lowering of via openings 56a to form via openings 56 shown in FIG. 13 of Farrar as reading on the "simultaneously etching" element of claim 65.

The simultaneous formation of trench openings 65 and the lowering of via openings 56a to form via openings 56, however, can not be read to be the "simultaneously etching" element of claim 65. As noted above, claim 65 requires that the plurality of spaced-apart lowered first openings must each extend away

from the bottom of the second opening, and the bottom surfaces of two or more of the plurality of spaced-apart lowered first openings must expose the via.

By contrast, FIG. 13 of Farrar shows one via opening 56 (read by the Examiner to be a lowered first opening) extending away from the bottom of a trench opening 65 (read by the Examiner to be the second opening) that does not contact a via. Instead, as shown in FIG. 13, the Farrar reference teaches that the bottom surface of the one via opening 56 exposes the top surface of a conducting layer 52.

Thus, since the Farrar reference fails to teach or suggest the “simultaneously etching” element that forms a second opening and a plurality of spaced-apart lowered first openings that each extend away from the bottom of the second opening, where the bottom surfaces of two or more of the plurality of spaced-apart lowered first openings expose the via, claim 65 is not anticipated by the Farrar reference. In addition, since claims 66-68 depend either directly or indirectly from claim 65, claims 66-68 are not anticipated by the Farrar reference for the same reasons as claim 65.

Claims 65 and 69 recite similar limitations, except that claim 69 refers to a contact rather than a via. Thus, since the Farrar reference fails to teach or suggest the “simultaneously etching” element that forms a second opening and a plurality of spaced-apart lowered first openings that each extend away from the bottom of the second opening, where the bottom surfaces of two or more of the plurality of spaced-apart lowered first openings expose the contact, claim 69 is not anticipated by the Farrar reference. In addition, since claims 70-72 depend either directly or indirectly from claim 69, claims 70-72 are not anticipated by the Farrar reference for the same reasons as claim 69.

Claim 73 recites:

"A method of forming a conductive line on a semiconductor structure, the semiconductor structure having a layer of insulation material, the layer of insulation material having a top surface, the method comprising:

"etching the top surface of the layer of insulation material to form a plurality of spaced-apart first trenches in the layer of insulation material, each first trench having a bottom surface that lies below the top surface of the layer of insulation material, a first width, and a first length that is substantially greater than the first width; and

"simultaneously etching the top surface of the layer of insulation material and the bottom surface of each first trench to form a second trench in the layer of insulation material, and lower the bottom surface of each first trench to form a plurality of spaced-apart lowered first trenches, the second trench having a top that lies in a common plane with the top surface of the layer of insulation material, a bottom that lies below the top surface of the layer of insulation material, a second width, and a second length that is substantially greater than the second width, each of the plurality of spaced-apart lowered first trenches extending away from the bottom of the second trench and having a third width and a third length that is substantially greater than the third width."

In rejecting claim 73, the Examiner appears to point to the formation of the via openings 56a shown in FIG. 11 of the Farrar reference as reading on the "etching" element of claim 73, with the via openings 56a constituting the plurality of spaced-apart first trenches. The Examiner also appears to argue that the via openings 56a have a first width and a first length that is substantially greater than the first width.

However, from what can be determined, there is nothing in Farrar that would teach or suggest to one skilled in the art that the via openings 56a are formed as trenches which have a width and a length that is substantially greater than the width. For example, Farrar refers to trench patterns and via patterns in paragraphs 0047 and 0049, but there is nothing in these paragraphs that would

teach or suggest to one skilled in the art that a via pattern is similar to a trench pattern.

Thus, since the Farrar reference fails to teach or suggest that the via openings 56a are formed as trenches which have a width and a length that is substantially greater than the width, claim 73 is not anticipated by the Farrar reference. In addition, since claims 74-80 depend either directly or indirectly from claim 73, claims 74-80 are not anticipated by the Farrar reference for the same reasons as claim 73.

Thus, for the foregoing reasons, it is submitted that the application is in a condition for allowance. Therefore, the Examiner's early re-examination and reconsideration are respectively requested.

Respectfully submitted,

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